A new brightening skincare regimen was developed to target multiple pigmentation pathways that affect pigmentation. The regimen consists of a facial cleanser, serum, and lotion, containing N-acetylglucosamine and a combination of benefit ingredients. Collectively, these ingredients exfoliate pigmented areas, reduce tyrosinase activity and melanin production, and deliver an overall pigment lightening effect. Glycolic acid peels are used to improve hyperpigmentation in dark-skinned patients.

**Clinical Grading:**
- Dermatologist grading of skin color using a shade card demonstrated significantly lighter skin at each visit, p<0.005
- All subjects improved between 1 and 3 grades on the shade card
- Dermatologist assessment of skin tone parameters revealed significant improvements compared with baseline condition, p<0.0001

**Tolerance:**
- The brightening regimen in combination with 20% glycolic acid peels was tolerated well overall.
- Dryness increased in some cases, but remained within the tolerable range of negligible to mild.
- One mild case of post-inflammatory pigmentation was reported following the 1st peel procedure and was treated with similar clinical intervention (subject continued in the study). One case of contact dermatitis was reported (subject was discontinued).
- The test regimen plus peels were found to be safe in the controlled conditions under physician direction.
- 100% of the study population preferred the test regimen to their usual skincare regimen.

**References**

**Clinical Graphology**
- **Clinical Grading**
  - Dermatologist Grading
  - Chromometer Measurement of luminance/brightness
  - Digital Photography
  - Self-Assessment

**Visual grading and photographs showed:**
- Lighter and more even skin color
- Evenness of skin tone
- Reduced blotchiness
- Reduction of pigment irregularities
- Improved overall appearance of facial skin

**Table 1. Summary of Key Benefit Ingredients in NeoStrata Enlighten Formulations**

<table>
<thead>
<tr>
<th>Brightening Agent</th>
<th>Action</th>
<th>Enzymology of Brightening Cleanser</th>
<th>Enzymology of Brightening Serum</th>
<th>Enzymology of Brightening Lotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Acetylglucosamine®</td>
<td>Reduces tyrosinase &amp; melanin; exfoliates</td>
<td>Reduce tyrosinase &amp; melanin; exfoliates</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>Sigmaparen (plant extract; Cornflower)</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>Eucommia Ulmoides Leaf Extract (Hyperglycosylated leaf extract)</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>Dihydroartemisinin-34 (Artemisia annua)</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>SubHeliSource (beeswax; helianthus annuus)</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
<tr>
<td>Retinol</td>
<td>Reduces tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
<td>Reduce tyrosinase &amp; melanin</td>
</tr>
</tbody>
</table>

**Table 2. Dermatologist Assessment of Skin Tone Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Evenness of Skin Tone</th>
<th>Skin Tone</th>
<th>Homogeneity of Spots</th>
<th>Hyperpigmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evenness of Skin Tone</td>
<td>2.97</td>
<td>3.44</td>
<td>2.64</td>
<td>3.14</td>
</tr>
<tr>
<td>Skin Tone</td>
<td></td>
<td></td>
<td></td>
<td>3.11</td>
</tr>
<tr>
<td>Homogeneity of Spots</td>
<td></td>
<td></td>
<td></td>
<td>3.26</td>
</tr>
<tr>
<td>Hyperpigmentation</td>
<td></td>
<td></td>
<td></td>
<td>3.11</td>
</tr>
</tbody>
</table>

**Figure 1. Dermatologist Assessment of Skin Color Using Shade Card**
- **Week 16**
- **Week 10**
- **Week 4**

**Figure 2. Self-Assessed Lightening of Spots and Pigmentation**
- **Week 16**
- **Week 10**
- **Week 4**

**Results**

A clinical study was conducted to evaluate the efficacy and safety of the NeoStrata® Enlighten regimen in combination with NeoStrata 20% ProSystem Rejuvenating Glycolic Acid Peels in imparting skin brightness, even tone and reduction in hyperpigmentation, relative to baseline condition.

**Introduction**

Pigmentation irregularities are a major concern for many ethnic skin populations spanning the globe. Safe, effective, and aesthetically pleasing formulations that can brighten skin tone and reduce dark spots are requested by dermatology patients around the world. Due to the high incidence of hyperpigmentation in Indian skin, chemical peels and lightening products have become common treatments in India. A new brightening skincare regimen was developed to target multiple pathways that affect pigmentation. The regimen consists of a facial cleanser, serum, and lotion, containing N-acetylglucosamine and a combination of benefit ingredients. Collectively, these ingredients exfoliate pigmented areas, reduce tyrosinase activity and melanin production, and deliver an overall pigment lightening effect. Glycolic acid peels are used to improve hyperpigmentation in dark-skinned patients.

**Objective**

A clinical study was conducted to evaluate the efficacy and safety of the NeoStrata® Enlighten regimen in combination with NeoStrata 20% ProSystem Rejuvenating Glycolic Acid Peels in imparting skin brightness, even tone and reduction in hyperpigmentation, relative to baseline condition.

**Study Methodology**

**Study Design**
- 16-week, prospective study evaluating the use of three cosmetic brightening products in combination with 20% free acid glycolic acid peels, with direct comparison to baseline condition.

**Population/Inclusion Criteria**
- 42 women enrolled (86 completed), 25-65 years old, in general good health, Fitzpatrick skin types III, IV, and V, of Indian ethnicity, epidermal pigmentation as confirmed by Wood’s lamp including: melasma, post-inflammatory hyperpigmentation, freckles, age spots, pigmented demarcation lines, and uneven skin tone. Excluded: use of antiaging/skin lightening cosmetics within 2 months, use of cosmetic procedures/retinoids within 6 months, pregnancy/lactation

**Clinical Measurements**
- 1) Dermatologist grading of: color (using a shade card 1-15 linear scale, evenness of all-over facial skin tone (1-5 scale), and clarity (presence of hyperpigmentation spots, 1-5 scale); 2) (Chromometer Minolta CR400), measurements were collected on the cheeks and forehead; 3) digital photography with image analysis (Enhanced Image Pro II); 4) self-assessment

**Home Care Products (NeoStrata® Enlighten Regimen): (Table 1)**
- Ultra Brightening Cleanser (am/pm)
- Illuminating Serum (am, under provided SPF 30 sunscreen; pm, under Pigment Control)
- Pigment Control (am)
- Free Acid Glycolic Acid Peels: NeoStrata® 20% ProSystem Rejuvenating Peels, pH 1.6
- NeoStrata Bionic Cream applied twice daily, 2 days pre- and post-peel following cleansing with Ultra Brightening Cleanser
- Peels were administered at weeks 2, 8, 14

**Test Products**
- NeoStrata® 20% ProSystem Rejuvenating Peels, pH 1.6
- NeoStrata Bionic Cream applied twice daily, 2 days pre- and post-peel following cleansing with Ultra Brightening Cleanser
- Peels were administered at weeks 2, 8, 14

**References**